UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/850,346	05/07/2001	Fabian Edgar Ernst	PHNL 000275	2300

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EXAMINER
REKSTAD, ERICK J

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 01/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/850,346	ERNST ET AL.
	Examiner	**Art Unit**	
	Erick Rekstad	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _25 August 2004_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-10_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-10_ is/are rejected.

7)☒ Claim(s) _1_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

This is a final rejection for application no. 09/850346 in response to the

amendment filed on August 25, 2004 in which claims 1-10 are presented for

examination.

Response to Arguments

Applicant's arguments with respect to claims 1-10 have been considered but are

moot in view of the new ground(s) of rejection.

Claim Objections

Claim 1 objected to because of the following informalities: The claim has been

amended with the line "for adjacent blocks when there is change of value" the line

should read "for adjacent blocks when there is a change of the value". Further, the

claim is unclear if the adjacent blocks are the blocks adjacent to the block in the first

image or the area in the second image.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly
claiming the subject matter which the applicant regards as his invention.

Claims 3 and 7 recite the limitation "said rise" in claim 1. There is insufficient

antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over

"Adaptive multiple-candidate hierarchical search for block matching algorithm" to Chan

Y.L. et al. in view of US Patent 6,542,547 to Wong.

[claim 1]

As shown on page 1638 under "Proposed algorithm", Chan teaches a method of

choosing an optimal candidate value to be used for matching a block from a first image

with an area from a second image, the method comprising:

Making a set of candidate values for determining an area to be matched from the

second image (Steps 1 and 2 described at the bottom of Column 1 on page 1638),

For each candidate value from the set, determining an area to be matched from

the second image, based on said candidate value, matching the block from the first

image with this area and calculating a matching error (Step 2 described at the bottom of

Column 1 on page 1638), and

Choosing the optimal candidate value from the set based on the calculated

matching errors (Steps 2-4 described at the bottom of Column 1 and top of Column 2 on

page 1638),

Characterized in that the steps a, b and c are repeated when there is a change of the value of the chosen optimal candidate value from a previous repetition, using a comparison of the attendant matching error to a predetermined criterion (Page 1638 from Proposed algorithm to Result, specifically steps 5-8 described at the top of Column 2).

Chan teaches the repeating of the search using a smaller step size (Page 1638 from Proposed algorithm to Result). Chan does not teach the repeating of the search using the adjacent blocks. Wong teaches the searching of the adjacent blocks of a selected best match block for use in a motion estimation algorithm in order to provide a cost-effective video encoder (Col 1 Lines 46-55 and 65-67, Col 4 Lines 36-44, Fig. 7). It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the step size block selection method of Chan with the neighboring block selection method in order to provide a more efficient motion estimation algorithm for a cost-effective video encoder.

[claim 2]

Chan and Wong teach the method of claim 1. Chan further teaches the predetermined criterion is a percentage of the matching error of the chosen optimal candidate value (Page 1638 Second Paragraph). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the predetermined criterion of Chan in order to adaptively adjust the number of candidates as taught by Chan.

[claims 3 and 4]

As best understood by the examiner, Chan teaches the adjusting of the threshold in order to find the global minimum versus the prior art that tended to get trapped in local minimum. The threshold (GT) is increased when the mean absolute difference is high and the threshold is decreased when the mean absolute difference is low. The location with the smallest difference is designated as the central location for the next search as required by claim 4 (Page 1638, Fig. 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the method of Chan in order to prevent the trapping in a local minimum.

Claim 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan and Wong as applied to claim 1-4 above, and further in view of US Patent 5,473,379 to Horne.

[claims 5-9]

Chan and Wong teach the method of choosing an optimal candidate value to be used for matching a block from a first image with an area from a second image as shown above for claims 1-4. Chan teaches block motion estimation algorithms have been widely used in video coding standards such as H.261 and MPEG (Page 1637 "Introduction"). Chan does not teach the system or apparatus for the method of claims 1-4. Wong teaches the use of a personal computer to execute the algorithm (Col 6 Lines 53-56, Fig. 8). Horne teaches a system and apparatus for block based motion compensation for digital video compression such as MPEG1 or MPEG2(Col 3 Lines 59-67, Col 4 Lines 1-26). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the method of Chan and Wong in the MPEG encoding

system of Horne in order to provide an MPEG encoder that provides a motion estimation method that finds an optimal motion vector.

[claim 10]

Chan and Wong teach the method of block based motion estimation for coding standards such as MPEG2. Wong teaches the use of a display (84) as shown in Figure 8. Horne teaches the system and apparatus for MPEG encoding. Chan, Wong and Horne do not teach the apparatus connected to a display for viewing of the video. It is well known in the art to take encoded video (MPEG2) and decode the video for use on a display (Official Notice). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Chan, Wong and Horne with the display of Wong in order to display the video.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 6,418,166 to Wu et al.

US Patent 5,706,059 to Ran et al.

US Patent 6,424,676 to Kono et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erick Rekstad whose telephone number is 703-305-5543. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chris Kelley can be reached on 703-305-4856. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

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Business Center (EBC) at 866-217-9197 (toll-free).

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